INVENTIONS & INNOVATION

Success Story

New Technology for Sulfide Reduction and Increased Oil Recovery

Bio-Competitive Exclusion Technology Produces More Oil and Reduces Corrosion

Benefits

- Reduces the cost of oil recovery
- Offers simple and inexpensive application protocols
- Improves production at reduced cost from multibillion barrel domestic residual oil resource
- Increases tertiary oil recovery by up to 60%
- Reduces corrosion-related production equipment costs
- Reduces costs to combat hydrogen sulfide and iron sulfide
- Provides safer working conditions

Applications

BCX is applicable in the petroleum industry for both oil and gas wells as an alternative to costly traditional methods of tertiary oil recovery. Applications include water flooding, primary oil wells, gas wells, gas storage reservoirs, and pipelines.

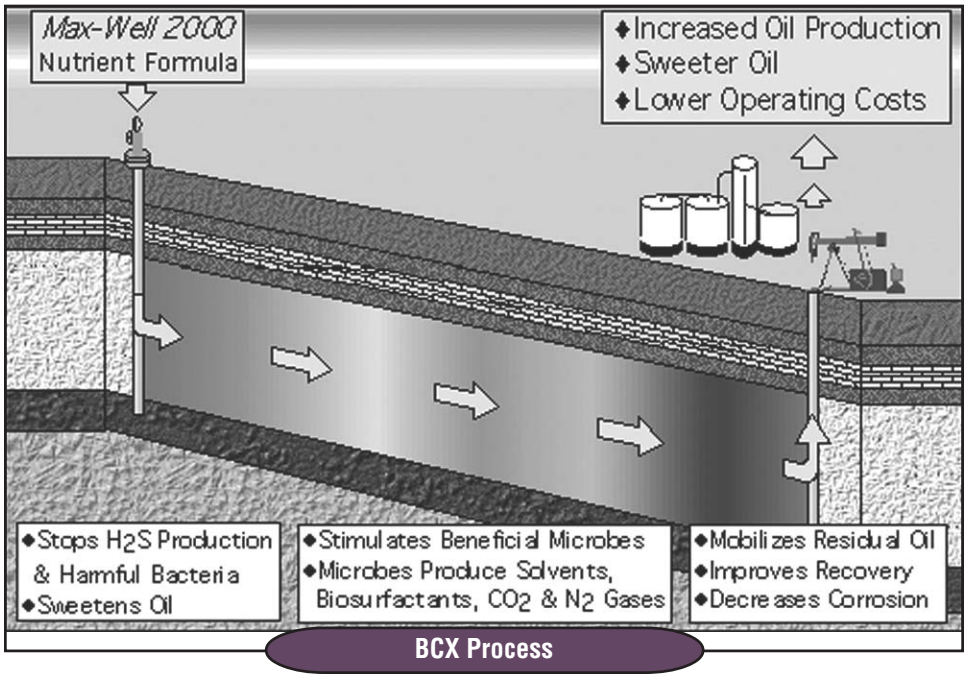
"DOE's Inventions and Innovation Program is a great asset for small R&D firms and has been an integral part of our successful technology development."

– Mike Dennis
President
The LATA Group, Inc.

Traditional methods of recovering tertiary oil are effective but costly for widespread use in the oil industry. The new Bio-Competitive Exclusion (BCX) process sets off a chain of events that benefit oil and gas well operations. The BCX process is initiated and sustained by Max-Well 2000, custom-designed blends of low-cost inorganic chemicals.

Technology Description

The Max-Well products stimulate and harness the power of targeted beneficial microorganisms that live in virtually every oil and gas reservoir. These bacteria grow rapidly, out-competing harmful sulfate-reducing bacteria for basic carbon nutrients. The sulfate-reducing bacteria are inhibited from producing new hydrogen sulfide and iron sulfide. Existing sulfides are removed by inorganic reactions and bacterial degradation, both a result of Max-Well treatments. The beneficial microbes also produce large amounts of biosurfactants, solvents, and gases that mobilize residual oil trapped within the reservoir.



Max-Well treatments result in improved water/oil ratios, higher quality oil, reduced corrosion costs, safer working conditions, and increased revenue. Periodic applications of low-cost Max-Well products enable oil producers to recover the enormous residual oil resource missed by standard methods.

System Economics and Market Potential

The fast-growing demand for biological technologies by the oil and gas industry has greatly expanded the multi-million dollar marketplace. The market continues to grow as industry leaders recognize the effectiveness of the BCX process and incorporate Max-Well 2000 products into production practices.

With the support of a grant from the U.S. Department of Energy's Inventions and Innovation Program, BCX/Max-Well 2000 products have been developed and commercialized during the last five years through a successful pilot demonstration program. The LATA Group is now positioned to transfer the technology to integrated production companies or to international industry marketing/service firms.

Geo-Microbial Technologies and the LATA Group are currently engaged in research and development of innovative ideas using the BCX technology for the mining and agricultural industries.

Recognition and Awards

The LATA Group's BCX technology received the prestigious *R&D Magazine* R&D 100 Award, resulting in growing sales volume to independent and major oil companies in the United States and Canada for several applications:

- Improved tertiary oil and gas recovery
- Sulfide reduction and prevention in gas storage caverns, pipelines, and production systems.

The Inventions and Innovation Program works with inventors of energy-related technologies to establish technical performance and to conduct early development. Ideas that have significant energy-savings impact and market potential are chosen for financial assistance through a competitive solicitation process. Technical guidance and commercialization support are also extended to successful applicants.

Project Partners

- **Inventions and Innovation Program**
  Washington, DC
- **The LATA Group, Inc.**
  Ochelata, OK
- **Geo-Microbial Technologies**
  Ochelata, OK

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